



# Bag Silos - Densities and Losses



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## What Are Bag Silos?



- A relatively new method of making silage in polyethylene bags.
- Bags are from 6 to 12 feet in diameter and 100 to 300 feet long.
- Chopped forage is pressed into the bag, and the ends are sealed to make a airtight silo.

## Why Are Bag Silos Becoming Popular?

- Low cost
- Flexible storage: size varies with harvest
- Good for growing farms: allows them to add silo capacity without capital cost
- Good for small farms: small enough that small farms can consider making silage
- Silage management: easier to inventory and feed from several bags simultaneously, matching silage quality with the animals fed.

## What Are Some Of The Unknowns In Using Bag Silos?

- We know relatively little about the capacity of bag silos and how capacity is affected by different bagging machines, operators, and crop characteristics.
- Little is known about losses in these types of silos. Preservation appears very good in some bags but not others.
- Currently we are measuring densities and losses in bag silos made at research farms at Prairie du Sac, Arlington and West Madison.

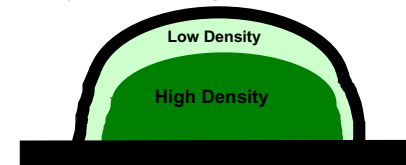


## Range Of Densities (lbs. dry matter/ft<sup>3</sup>) Measured In 25 Bags

Bagger	Research Station	Hay	Corn
8 Ag Bag	PDS	12.8-13.5 <b>13.2</b>	12.1-17.7 <b>14.5</b>
9 Ag Bag	Arl		10.4-11.4 <b>11.0</b>
9 Kelly Ryan	Arl	14.1-15.9 <b>14.6</b>	10.4-13.8 <b>12.1</b>
9 Kelly Ryan	WM	10.9-14.8 <b>13.1</b>	10.3-12.2 <b>11.0</b>

## Why Is The Density Variable?

- We are not completely sure yet.
- We have found differences between bagging machines, operators and crops as seen in the table below.
- Bags hold more crop on a dry basis when the crop is ensiled drier within the range of 50 to 70% moisture.
- Also density within the bag varies across the face.



## Range of Dry Matter Losses Measured in 13 Bags

Type of Loss	Hay (4)	Corn (9)	Average
Gaseous/Seepage	3.8-12.8	-5.8-11.5	7.0
Spoiled Silage	0.0-25.4	0.0-21.9	5.8
<b>Total Losses</b>	<b>10.0-38.2</b>	<b>-5.8-30.6</b>	<b>12.8</b>

- Two bags had large spoilage losses due to holes. Removing those bags from the averages. Average gaseous, spoilage and total losses were 6.3, 2.2 and 8.5% respectively.
- Overall, the losses when bag integrity is well maintained are lower those than in bunker silos and similar to those in tower silos.
- However, substantial losses do occur when holes are not repaired promptly.
- When more bags are emptied, we will look at the effects of density, feed out rate, etc. on the level of losses.